**SHARIQ HAFEEZ**

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# Education

**University Of Michigan – Ann Arbor:**  Computer Engineering 05/2020

GPA: 3.92 / 4.0

Coursework: Operating Systems, Data Structures & Algorithms, Machine Learning(Coursera)

Intro Signals & Systems, Microprocessor Toys, Intro Logic Design

Skills: C++, C, Verilog, Python, Assembly (x86 & ARM), Matlab, LTSPICE

# Experience

**System Security Firmware Intern | C, Bash, Assembly** 05/2018 to 08/2018

*Marvell Semiconductor* – Marlborough, MA

* Enabled an enterprise SSD controller to boot over Quad-SPI, doubling memory transfer speed.
* Adapted encryption API to run on dedicated cryptography hardware for new board release.
* Wrote board startup code and composed linker script to assemble program memory.

**Research Assistant | C, Bash, Perf, Toplev** 01/2019 to 04/2019

*University Of Michigan* – Ann Arbor, MI

* Contributed to project that monitors cache misses caused by data locality issues.
* Identified suitable database benchmarks and manually optimized prefetching and struct layout.

**Engineering Intern | C++** 04/2017 to 07/2017

*Intent Design* – Farmington Hills, MI

* Led a team in building a propeller thrust bench to determine feasibility of suspending a 15kg device.
* Interfaced microcontroller with various devices to analyze thrust and power consumption curves.

# Personal Projects (All detailed at sshafeez.github.io)

[**Parallel Loop Detector**](https://sshafeez.github.io/Parallel_Loop_Detection/) **| Python, Clang, OpenMP, Intel Pin** 10/2018 to 03/2019

* Combined static and dynamic analyses to identify thread-safe loops in C/C++ code.
* Analyzed syntax trees generated by Clang compiler for static analysis.
* Monitored program execution and memory accesses using Intel Pin tool.

[**Selective Data Compression Algorithm**](https://sshafeez.github.io/Selective_Image_Compression/)**| C++, Python** 04/2019 to 04/2019

* Developed compressed matrix model for fast matrix multiplication in C++ with Python bindings.
* Extensively used linear algebra topics like Least-Squares and projections to minimize distortion.
* Generated sample image matrices that outperform SVD compression in reducing distortion.

[**Michigan Neuro-Prosthetics – Electronics Lead**](https://sshafeez.github.io/Prosthetic_Arm_V1/) **| C++** 09/2016 to 11/2018

* Led sub-team of 11 in creating electronics for a 3D printed prosthetic controlled by muscle signals.
* Refactored signal processing algorithm to use machine learning to recognize custom gestures.
* Implemented a sleep mode to increase battery life by 4 hours and reduce battery size.

[**IOT Home Security Suite**](https://sshafeez.github.io/Security_camera/) **| Python, C++, AWS** 12/2018 to 01/2018

* Developed door access control system that uses facial recognition and RFID tags.
* Designed a camera to automatically detect and photograph personnel from nearby detected movements.
* Implemented projects using a Raspberry Pi and Arduino in conjunction with various IO and peripherals.
* Used Google Vision, AWS for image processing and MQTT and NoSQL for data and message passing.